Photochemical Effects on Terrestrial Planet Atmospheres

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The particular shape of the UV radiation emitted by low mass stars may produce interesting chemical changes in atmospheres like that of present Earth. Simulations performed by Segura et al. (2005) show that given the same flux of biogenic compounds as on the present Earth, these chemical species may have longer residence times in the atmospheres of planets around active and quiescent M main sequence stars. This could make it more feasible to simultaneously detect two or three biogenic compounds, which would provide strong evidence for the existence of extraterrestrial life. Hence, M stars may make interesting targets for TPF or Darwin. Reference: Segura et al. 2005 Astrobiology 5(6), 706-725.